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C:\Users\madel\Desktop\CS260 HW\HW5\Q1.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed at max (no interaction)

Edit Execute

Text Segment

Byte	Address	Code	Basic	Source
0x00400000	0x24040004	addiu \$4,\$0,4	11: li \$a0, 4 #a0 -> 4 (a0 -> argument)	
0x00400004	0xd0e10008	jal 0x04000020	12: jal f	
0x00400008	0x0028021	addiu \$16,\$0,\$2	13: move \$p0, \$v0	
0x0040000c	0x24020001	addiu \$2,\$0,1	14: li \$v0, 1	
0x00400010	0x00102021	addiu \$4,\$0,\$16	15: move \$a0, \$p0	
0x00400014	0x0000000c	syscall	16: syscall	
0x00400018	0x2402000a	addiu \$2,\$0,10	17: li \$v0, 10	
0x0040001c	0x0000000c	syscall	18: syscall	
0x00400020	0x20010001	addi \$1,\$0,1	21: bgt \$a0, 1, recursion #if x > 1, go to recursion part	
0x00400024	0x0024082a	slt \$1,\$1,\$4		
0x00400028	0x14200003	bne \$1,\$0,3		
0x0040002c	0x1080001c	bneq \$4,\$0,22	22: beqz \$a0, x0 #if x = 0	

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	0	0	0	0	0	0	0	0
0x10010004	0	0	0	0	0	0	0	0
0x10010008	0	0	0	0	0	0	0	0
0x1001000c	0	0	0	0	0	0	0	0
0x10010010	0	0	0	0	0	0	0	0
0x10010014	0	0	0	0	0	0	0	0
0x10010018	0	0	0	0	0	0	0	0
0x1001001c	0	0	0	0	0	0	0	0
0x10010020	0	0	0	0	0	0	0	0

Mars Messages Run I/O

61
-- program is finished running --

Clear

Registers

Name	Number	Value
\$zero	0	0
\$at	1	3
\$v0	2	10
\$v1	3	0
\$a0	4	61
\$a1	5	0
\$a2	6	0
\$a3	7	0
\$a4	8	40
\$t1	9	21
\$t2	10	0
\$t3	11	0
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	0
\$s0	16	61
\$s1	17	0
\$s2	18	0
\$s3	19	0
\$s4	20	0
\$s5	21	0
\$s6	22	0
\$s7	23	0
\$s8	24	0
\$s9	25	0
\$k0	26	0
\$k1	27	0
\$gp	28	268468224
\$sp	29	2147479540
\$fp	30	0
\$ra	31	4194312
\$pc		4194326
\$hi		0
\$lo		21

1.

C:\Users\madel\Desktop\CS260 HW\HW5\Q2.asm - MARS 4.5

File Edit Run Settings Tools Help

Run speed at max (no interaction)

Edit Execute

Text Segment

Byte	Address	Code	Basic	Source
0x00400000	0x2404000c	addiu \$4,\$0,15	9: li \$a0, 15 #k=15	
0x00400004	0xd0e10008	jal 0x04000020	10: jal function	
0x00400008	0x0028021	addiu \$16,\$0,\$2	11: move \$p0, \$v0 #save v0 to s0	
0x0040000c	0x24020001	addiu \$2,\$0,1	12: li \$v0, 1	
0x00400010	0x00102021	addiu \$4,\$0,\$16	13: move \$a0, \$p0	
0x00400014	0x0000000c	syscall	14: syscall	
0x00400018	0x2402000a	addiu \$2,\$0,10	15: li \$v0, 10	
0x0040001c	0x0000000c	syscall	16: syscall	
0x00400020	0x20010001	addi \$1,\$0,1	19: bgt \$a0, 1, recursion #if k>1 (k>=2)	
0x00400024	0x0024082a	slt \$1,\$1,\$4		
0x00400028	0x14200000	bne \$1,\$0,0		
0x0040002c	0x20010002	addi \$1,\$0,2	22: div \$t0, \$a0, 2 #t0->a0/2	

Data Segment

Address	Value (+0)	Value (+4)	Value (+8)	Value (+c)	Value (+10)	Value (+14)	Value (+18)	Value (+1c)
0x10010000	0	0	0	0	0	0	0	0
0x10010004	0	0	0	0	0	0	0	0
0x10010008	0	0	0	0	0	0	0	0
0x1001000c	0	0	0	0	0	0	0	0
0x10010010	0	0	0	0	0	0	0	0
0x10010014	0	0	0	0	0	0	0	0
0x10010018	0	0	0	0	0	0	0	0
0x1001001c	0	0	0	0	0	0	0	0
0x10010020	0	0	0	0	0	0	0	0

Mars Messages Run I/O

560
-- program is finished running --

Clear

Registers

Name	Number	Value
\$zero	0	0
\$at	1	2
\$v0	2	10
\$v1	3	0
\$a0	4	560
\$a1	5	0
\$a2	6	0
\$a3	7	0
\$a4	8	14
\$t1	9	1
\$t2	10	2
\$t3	11	0
\$t4	12	0
\$t5	13	0
\$t6	14	0
\$t7	15	0
\$s0	16	560
\$s1	17	4
\$s2	18	0
\$s3	19	0
\$s4	20	0
\$s5	21	0
\$s6	22	0
\$s7	23	0
\$s8	24	0
\$s9	25	0
\$k0	26	0
\$k1	27	0
\$gp	28	268468224
\$sp	29	2147479540
\$fp	30	0
\$ra	31	4194312
\$pc		4194326
\$hi		0
\$lo		4

2.

C:\Users\made\Desktop\CS260 HW\HW5\hw5\project1.asm - MARS 4.5
 File Edit Run Settings Tools Help

Run speed at max (no interaction)

Edit Execute

Text Segment

Offset	Address	Code	Basic	Source
0x00400000	0x3c011001	lui \$1, 4097	17:	la \$a0, array\$a0 -> array
0x00400004	0x34300000	ori \$16, \$1, 0	18:	li \$t0, 0 #t0->0
0x00400008	0x24080000	addiu \$9, \$0, 0	21:	mti \$t1, \$t0, 7 #if t0 < 7, t1 = 1, else t1 = 0
0x0040000c	0x29090007	mti \$9, \$9, 7	22:	beqz \$t1, else #if t0>7, go to sort
0x00400010	0x11200006	beqz \$9, \$0, 6	23:	li \$v0, 5#ask input of int
0x00400014	0x24020005	addiu \$2, \$0, 5	24:	syscall
0x00400018	0x0000000c	syscall	25:	sw \$v0, 0(\$a0) #save input to array
0x0040001c	0xe4020000	sw \$2, 0(\$16)	26:	addi \$a0, \$a0, 4 #load next index add in array
0x00400020	0x22108004	addi \$16, \$16, 4	27:	addi \$t0, \$t0, 1 #increment value
0x00400024	0x21080001	addi \$9, \$9, 1	28:	j loop
0x00400028	0x08100003	j 0x0040000c	30:	la \$a0, array \$a0->array address
0x0040002c	0x3c011001	lui \$1, 4097	31:	li \$a1, 0 #a0->0 (index)
0x00400030	0x34240000	ori \$4, \$1, 0	32:	li \$a2, 6 #a1->6 (index)
0x00400034	0x24060006	addiu \$6, \$0, 6	33:	jal quickSort
0x00400038	0x0c10001d	jal 0x00400074	35:	la \$a0, array\$a0->array address
0x0040003c	0x3c011001	lui \$1, 4097	36:	li \$t0, 0 #t0->index count
0x00400040	0x34300000	ori \$16, \$1, 0	38:	mti \$t1, \$t0, 7
0x00400044	0x24080000	addiu \$8, \$0, 0	39:	beqz \$t1, exit
0x00400048	0x29090007	mti \$9, \$9, 7	40:	li \$v0, 1
0x0040004c	0x11200006	beqz \$9, \$0, 6	41:	lw \$a0, 0(\$a0)
0x00400050	0x24020005	addiu \$2, \$0, 5	42:	syscall
0x00400054	0x0000000c	syscall	43:	addi \$a0, \$a0, 4
0x00400058	0x8e840000	lw \$4, 0(\$16)	44:	addi \$t0, \$t0, 1
0x0040005c	0x0000000c	syscall		
0x00400060	0x22108004	addi \$16, \$16, 4		
0x00400064	0x21080001	addi \$9, \$9, 1		

Mars Messages Run I/O

17
 9
 6
 4
 8
 246891017
 -- program is finished running --

Registers Coproc 1 Coproc 0

Name	Number	Value
\$zero	0	0
\$at	1	268500992
\$v0	2	10
\$v1	3	0
\$a0	4	27
\$a1	5	0
\$a2	6	6
\$a3	7	0
\$t0	8	7
\$t1	9	0
\$t2	10	4
\$t3	11	9
\$t4	12	9
\$t5	13	268501016
\$t6	14	0
\$t7	15	0
\$a0	16	268501020
\$a1	17	0
\$a2	18	0
\$a3	19	0
\$a4	20	0
\$a5	21	0
\$a6	22	0
\$a7	23	0
\$t8	24	0
\$t9	25	0
\$k0	26	0
\$k1	27	0
\$gp	28	268468224
\$sp	29	2147479548
\$fp	30	0
\$ra	31	4194368
\$pc		4194420
\$hi		0
\$lo		16

3.